Amendments to the Specification

Please amend the paragraph beginning on page 3, line 9, as follows:

An OFDM format for a signal in first and second configurations is shown in Figures 1A and 1B. In the format of Figure 1A, a DFT (or FFT) block 11A is preceded by a ~~cylic~~ cyclic prefix segment 13A that serves as a guard interval for the DFT block. Use of a guard interval, or its equivalent, is required with an OFDM format, in order to account for the possible presence of multipath signals in a received signal. In the format of Figure 1B, a DFT block is followed by a zero-padding segment that also serves as a guard interval for the DFT block.

Please amend the paragraph beginning on page 3, line 16, as follows:

A pseudo-random or pseudo-noise (PN) sequence, a coded m-sequence of symbols, is ~~usedl in~~ used in an OFDM format. An m-sequence is a sequence of symbols, usually 0's and 1's, of a selected length that satisfies three requirements: (1) the number of symbols of different types (e.g., the number of 0's and the number of 1's) is "balanced", or approximately the same, over the set of such sequences; (2) the Boolean sum of any two m-sequences, and the result of end-around shifting of symbols in any m-sequence, is again an m-sequence; and (3) the convolution of two m-sequences, MS(t;i) and MS(t;j), satisfies an orthogonality condition:

$$MS(t+\Delta t;i)*MS(t;j) = \cancel{\delta(\Delta t)\cdot\delta(i,j)}\ \underline{\delta(\Delta t)\bullet\delta(i,j)}, \qquad (1)$$

where $\delta(\Delta\tau)$ is a modified delta function ($\cancel{\delta(\Delta\tau)}$ $\underline{\delta(\Delta\tau)} = 0$ for $|\Delta\tau| > \Delta t1$) and $\delta(i,j)$ is a Kronecker delta (= 0 unless i = j). The Kronecker delta can be omitted if the m-sequence is independent of the index number i, or if the index numbers are known to satisfy i = j. The length of an m-sequence is most conveniently chosen to be $2^J - 1$, where J is a selected positive integer, such as J = 7, 8 or 9.

Please amend the paragraph beginning on page 7, line 5, as follows:

Let h(t) be a response to transmission of an impulse signal $\delta(t)$ (modified delta function with infinitesimal width $\Delta t1$) along the transmission channel TC used for a signal frame. If the signal Tr(t) is transmitted along the channel TC, a received signal Rc(t) may be expressed as a convolution of the transmitted signal and the impulse response signal,

$$Rc(t2) = Tr(t1) * h(t2 - t1), \qquad (3)$$

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$$Tr(t) = PN(t;i;ideal) + mp(t) \quad (t=(i;Rc) \le t < t'(i+1;Rc), \tag{4}$$

where * indicates that a convolution or correlation operation is performed on the two signals Tr(t1) and h(t2 - t1). Because of the orthogonal construction of each PN sequence in Eq. (1), one verifies that

$$PN(t + \Delta t;i;ideal) * PN(t;j;ideal) = \cancel{\delta(\Delta t)\ \delta(i,j)}\ \underline{\delta(\Delta t)\bullet\delta(i,j)} \tag{5}$$

$$PN(t + \Delta t;i;ideal) * Rc(t)$$

$$= \delta(\Delta t) * h(t) + (\text{small residual due to } mp(t)\ ) \tag{6}$$

within a time interval $t'(i;Rc) \le t \le t''(i;Rc)$, where the Kronecker delta index $\delta(i,j)$ (= 0 or 1) can be dropped if the PN sequences PN(t;i;ideal) are independent of the index i, or if the particular PN sequence (i) is known and i = j.

Please amend the paragraph beginning on page 9, line 9, as follows:

One method of estimating one or more transmission channel characteristics analyzes the Fourier transform FT(f;Rc) of a received signal Rc(t) corresponding to transmission of an impulse function h(t). Ideally, the Fourier transform FT(f;Rc) is approximately a sync function,

$$FT(f;Rc;ideal) = sync\ (f/f0), \tag{10}$$

with an appropriate choice of a reference frequency ~~f0representing~~ f0 representing the bandwidth in the Fourier domain. The deviation of the actual Fourier transform FT(f;Rc) from the ideal transform FT(f;Rc;ideal) can be used to estimate one or more (time varying) characteristics for the transmission channel, frame by frame or over a sequence of frames, as desired.

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